

WHAT IS CLAIMED IS:

1. An ultrasonic clamp coagulator apparatus comprising:
a housing;
5 an ultrasonic waveguide positioned within said housing, said ultrasonic waveguide having an end-effector extending distally from said housing;
a clamp arm pivotally mounted on said housing, said clamp arm pivotable with respect to said end-effector for clamping tissue between said clamp arm and said end-effector, said clamp arm comprising:
10 a top surface, said top surface comprising at least one hole;
a bottom surface opposite said top surface, said bottom surface comprising at least one engaging surface;
wherein said hole extends from said top surface to said engaging surface of said bottom surface; and
15 an actuating element within said housing, said actuating element connected to said clamp arm, said actuating element adapted to actuate said clamp arm pivotably with respect to said end-effector.
2. An ultrasonic clamp coagulator apparatus in accordance with Claim 1, said
20 clamp arm further comprising:
a slot extending from the proximal end of said clamp arm distally into said clamp arm, wherein said slot is straight from said proximal end of said clamp arm to said hole.
- 25 3. An ultrasonic clamp coagulator apparatus in accordance with Claim 2, wherein said clamp arm is curved from the distal end of said slot to the distal end of said clamp arm.

4. An ultrasonic clamp coagulator apparatus comprising:
a housing;
an ultrasonic waveguide positioned within said housing, said ultrasonic
waveguide having an end-effector extending distally from said housing;
- 5 a clamp arm pivotally mounted on said housing, said clamp arm pivotable with
respect to said end-effector for clamping tissue between said clamp arm and said
end-effector, said clamp arm comprising:
a top surface, said top surface comprising a plurality of holes;
a bottom surface opposite said top surface, said bottom surface
10 comprising a plurality of engaging surfaces;
wherein said plurality of holes extend from said top surface to said plurality
of engaging surfaces of said bottom surface; and
an actuating element within said housing, said actuating element connected to said
clamp arm, said actuating element adapted to actuate said clamp arm pivotably
15 with respect to said end-effector.
5. An ultrasonic clamp coagulator apparatus in accordance with Claim 4, said
clamp arm further comprising:
a slot extending from the proximal end of said clamp arm distally into said clamp
20 arm, wherein said slot is straight from said proximal end of said clamp arm to the
most proximal of said plurality of holes.
6. An ultrasonic clamp coagulator apparatus in accordance with Claim 5,
wherein said clamp arm is curved from the distal end of said slot to the distal end
25 of said clamp arm.
7. An ultrasonic clamp coagulator apparatus in accordance with Claim 6,
wherein said slot is substantially T-shaped.

8. An ultrasonic clamp coagulator apparatus comprising:

a housing;

an ultrasonic waveguide positioned within said housing, said ultrasonic waveguide having an end-effector extending distally from said housing;

- 5 a clamp means for clamping tissue between said clamp arm and said end-effector;
and
an actuator connected to said clamp means, said actuator adapted to move said clamp means with respect to said end-effector.

10 9. An ultrasonic clamp coagulator apparatus comprising:

a housing;

an outer tube having a proximal end joined to said housing, and

a distal end, said outer tube defining a longitudinal axis;

an inner tube reciprocally positioned within said outer tube;

- 15 an ultrasonic waveguide positioned within said outer tube, said ultrasonic waveguide having an end-effector extending distally of said distal end of said outer tube, and
a clamp arm pivotally mounted on said distal end of said outer tube for pivotal movement with respect to said end-effector for clamping tissue between said clamp
20 arm and said end-effector, said clamp arm operatively connected to said inner tube so that reciprocal movement of said inner tube pivots said clamp arm, said clamp arm comprising:

a top surface, said top surface comprising at least one hole;

- 25 a bottom surface opposite said top surface, said bottom surface comprising at least one engaging surface;
wherein said hole extends from said top surface to said engaging surface of said bottom surface.

10. An ultrasonic clamp coagulator apparatus in accordance with Claim 9, said clamp arm further comprising:

a slot extending from the proximal end of said clamp arm distally into said clamp arm, wherein said slot is straight from said proximal end of said clamp arm to the
5 most proximal of said plurality of holes.

11. An ultrasonic clamp coagulator apparatus in accordance with Claim 10, wherein said clamp arm is curved from the distal end of said slot to the distal end of said clamp arm.

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12. An ultrasonic clamp coagulator apparatus in accordance with Claim 10, wherein said slot is substantially T-shaped.

13. An ultrasonic clamp coagulator apparatus comprising:

15 a housing;

an outer tube having a proximal end rotatably joined to said housing, and a distal end, said outer tube defining a longitudinal axis about which said outer tube is rotatable;

an inner tube reciprocally positioned within said outer tube;

20 an ultrasonic waveguide positioned within said inner tube and having an end-effector extending distally of said distal end of said outer tube; and

a clamp arm pivotally mounted on said distal end of said outer tube for pivotal movement with respect to said end-effector for clamping tissue between said clamp arm and said end-effector, said clamp arm being pivotable about a pivot axis

25 perpendicular to said longitudinal axis, said clamp arm comprising:

a top surface, said top surface comprising at least one hole;

a bottom surface opposite said top surface, said bottom surface comprising at least one engaging surface;

30 wherein said hole extends from said top surface to said engaging surface of said bottom surface.

14. An ultrasonic clamp coagulator apparatus in accordance with Claim 13, said clamp arm further comprising:

a slot extending from the proximal end of said clamp arm distally into said clamp arm, wherein said slot is straight from said proximal end of said clamp arm to the
5 most proximal of said plurality of holes.

15. An ultrasonic clamp coagulator apparatus in accordance with Claim 14, wherein said clamp arm is curved from the distal end of said slot to the distal end of said clamp arm.

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16. An ultrasonic clamp coagulator apparatus in accordance with Claim 15, wherein said slot is substantially T-shaped.

17. An ultrasonic clamp coagulator apparatus in accordance with Claim 16,
15 said clamp arm further comprising a tissue pad, said tissue pad comprising a T-shaped protrusion, said protrusion insertable into said substantially T-shaped slot of said clamp arm.

18. A curved clamp arm for use with an ultrasonic surgical instrument
20 comprising:

a proximal end and a distal end;
a top surface extending from said proximal end to said distal end of said curved clamp arm, said top surface comprising at least one hole;
a bottom surface opposite said top surface, said bottom surface extending
25 from said proximal end to said distal end of said clamp arm, said bottom surface comprising at least one engaging surface;

wherein said hole extends from said top surface to said engaging surface of said clamp arm.

19. A curved clamp arm for use with an ultrasonic surgical instrument according to Claim 18, comprising a plurality of said holes in said top surface, and a plurality of said engaging surfaces in said bottom surface, wherein each said hole in said top surface extends through said curved clamp arm, terminating at a
5 corresponding said engaging surface on said bottom surface.

20. A curved clamp arm for use with an ultrasonic surgical instrument according to Claim 19, wherein said plurality of said holes are staggered laterally from said proximal end of said clamp arm to said distal end of said clamp arm.

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